



Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

www.mnnps.org

Volume 31 Number 1

Winter 2012

Monthly meetings

Thompson Park Center/Dakota

Lodge

Thompson County Park

360 Butler Ave. E.,

West St. Paul, MN 55118

Programs

The Minnesota Native Plant Society meets the first Thursday in October, November, December, February, March, April, May, and June. Check at www.mnnps.org for more program information.

6 p.m. — Social period

7 – 9 p.m. — Program, Society business

Feb. 2: “Using Plants to Assess Wetland Quality in Minnesota – the Next Generation,” by Michael Bourdaghs, research scientist for the PCA. **Plant-of-the-Month:** Tussock sedge (*Carex stricta*).

March 1: “Natural History of Maple Syrup Production,” by Dr. Stephen G. Saupe, professor, Biology Department, College of St. Benedict and St. John’s University. **Plant-of-the-Month:** Black maple (*Acer nigrum*), also by Dr. Saupe.

March 24: Symposium on Plants of Minnesota. See page 2.

April 5: Stalking rare native plants,” by Malcolm and Rosemary MacFarlane, volunteers, DNR County Biological Survey. **Plant-of-the-Month:** Least moonwort (*Botrychium tenebrosus*).

May 3: “Wild Orchids of Minnesota,” by Welby Smith, botanist, Minnesota DNR. **Plant-of-the-Month:** Case’s ladies’-tresses (*Spiranthes casei*).

La Salle Lake SRA has a landscape to experience

by Erika Rowe, Minnesota County Biology Survey plant ecologist, DNR and former MNNPS board member.

As a plant ecologist with the DNR’s Minnesota County Biological Survey, I have hiked many miles and seen a variety of landscapes in northwestern Minnesota. Yet the landscape surrounding La Salle Lake and Creek, just north of Itasca State Park in Hubbard County, immediately stood out as unique. It felt remote and wild, with steep, rugged slopes with red pine and balsam fir, rocky ravines with streams bordered by white pine and sugar maple, and old-growth cedar seepage swamps. Above the valley, on the flatter terrain, expansive oak, aspen and maple forests frame this stunning lake and valley.

Fortunately, now others can explore this landscape as well. On Oct. 27, 2011, the State of Minnesota purchased approximately 1,000 acres surrounding La Salle Lake, establishing Minnesota’s newest state recreation area (SRA). The Clean Water, Land and Legacy Amendment Act — specifically the Outdoor Heritage Fund — provided much of the funds to acquire this property. In addition, an area adjacent to the SRA, north of Hubbard Co. Rd. 9, has been established as a Scientific and Natural Area (SNA).

La Salle Lake, the highlight of this extraordinary landscape, is a large (224 acres) lake that is one of the deepest (213 feet) in Minnesota. It has 18,600 feet of shoreline, and much of its input is spring-fed. It is remarkably wild and scenic, having never been developed, aside from the very northern edge where a resort caretaker’s home sits along with a few cabins and buildings — remnants of the previous owners.

Several different native plant communities exist in the La Salle Lake area, and because of the significant elevation change throughout the area and the myriad slope aspects, the vegetation of the area is complex. These natural communities support a number of rare species including ram’s-head lady slipper (*Cypripedium arietinum*), northern oak fern (*Gymnocarpium robertianum*), hair-like sedge (*Carex capillaris*), trumpeter swans

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March 24 symposium will feature plants

by Scott Milburn, MNNPS president.

Our approach to the MNNPS Symposium this year differs from that of recent years. We have been focused on regions and landforms, but this is a special year — the Society is marking 30 years as an organization. With that in mind, the most suitable topic is plants.

We have been lining up speakers, and things are moving forward. In addition, we are the benefactors of an anonymous donation of \$5,000. Rather than donating this money to other organizations, as we have been doing over the past few years, we decided that the best use is for the Society itself. I am pleased to say that this allows us to bring two prominent botanists from outside of Minnesota to our symposium.

The first is Dr. Don Farrar of Iowa State University, who is well known for his research of moonworts. The second is Dr. Tony Reznicek, of the University of Michigan. Dr. Reznicek may be best known for his authorship of the sedge component of the Flora of North America series. He has also been hard at work updating the Michigan Flora into a one-volume publication. The symposium should be a very exciting day. Stay tuned for further details.

The symposium will be held March 24 and will be at the Bell Museum of Natural History on the University of Minnesota campus. The cost will be \$42 for members and \$30 for full-time students. I am not sure about the times yet, but they will be in the brochures. These will be mailed in the beginning of February.

Treasurers' report

Treasurers Ron and Cathy Huber report that the Minnesota Native Plant Society's 2011 income totalled \$17,796. This included \$5,384 in donations. Expenses totalled \$9,515, for a net income of \$8,280.

Assets of \$25,388 include \$8,939 in four CDs and \$16,393 in the checking account.

Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following.

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation, ecosystems.
6. Preservation of native plants, plant communities, and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops, and field trips.

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Questions? Go to our website: www.mnnps.org

La Salle Lake SRA

Continued from page 1

(*Cygnus buccinator*) and two caddis fly species (*Oxyethira itasca* and *O. ecornuta*). The area's abundant and diverse habitats are also rich with common plants, including 12 species of orchids; animals including river otter, gray wolf, fisher, bald eagle, osprey, loons; and many species of

woodland warblers.

This extraordinary landscape doesn't stop at the SRA's southern boundary, however. The entire landscape I outlined for the biological survey, a mix of public and private ownership, is a 3,200-acre corridor stretching from the confluence of the Mississippi River and La Salle Creek to Itasca State Park. La Salle Creek, originating

near the east arm of Lake Itasca, meanders north 11 miles along a narrow valley floor through wet meadows, shrub swamps and lowland seepage forests.

Four lakes of varying size and depth occur along the creek's route. The creek eventually joins the Mississippi River just north of La Salle Lake, within the newly acquired SNA. This narrow valley is noteworthy, as it has been identified as a tunnel valley formed during the Quaternary Period and is present at the juncture of two distinct areas of glacial deposits, the Itasca Moraine and the Guthrie Till Plain.

Besides the extraordinary natural resources of the La Salle Lake area, named after the French explorer René-Robert Cavelier, Sieur de La Salle, it is rich in cultural resources as well. A Native American prehistoric site was discovered in the early 1990s adjacent to La Salle Creek in what is now the new SNA. Ceramic shards recovered from the site have been dated about 3,180 years old, one of the earliest known dates for an Elk Lake Culture occupation in Minnesota.

The DNR has initiated the process to create a master plan to guide development, management of natural and cultural resources, tourism, and recreation for La Salle Lake SRA for the next 15 to 20 years. I encourage those who are interested in providing input on the project to go to: www.dnr.state.mn.us/state_parks/la_salle_lake and click on the "Get Involved!" hotlink. La Salle Lake State Recreation Area is now open to the public, but recreational opportunities are limited to day use.

Wild Ones conference

Wild Ones 2012 "Design With Nature" conference will be Saturday, Feb. 25, 8 a.m. to 4:30 p.m. at the Plymouth Creek Center, 14800 34th Ave., Plymouth, MN, 55447. More information is available at www.designwithnatureconference.org/



La Salle Creek winds south the new SRA.



La Salle Lake, is the highlight of the new State Recreation Area. Both photos by Erika Rowe.

Pagami Creek fire shows how tree mortality from fire varies with species

by Lee Frelich, Ph.D., research associate and director, The University of Minnesota Center for Forest Ecology. This is a summary of his talk at the Dec. 1, 2011 Minnesota Native Plant Society meeting.

On Aug. 18, 2011, the Pagami Creek fire was ignited by lightning in The Boundary Waters Canoe Area Wilderness, about 14 miles east of Ely. The fire was allowed to burn because it met the Forest Service criteria for WFU (Wildland Fire Use.) Under this policy, fires in certain locations and under certain conditions are not suppressed, to help restore the natural role of fire in wilderness areas.

As the fire smoldered and burned little forest for more than three weeks, a drought developed, and on Sept. 12, dry conditions combined with high winds caused the fire to blow up. It grew rapidly to about 93,000 acres in size over the next two days. The smoke was noticeable in Chicago, and the plume was traced through Poland and eventually to China.

At 145 square miles, this was larger than the 112-square-mile Ham Lake Fire of 2007, and the largest fire in the BWCAW since 1875. However, it was small compared to the largest fires in the 400-year history of fire reconstruction in the BWCAW. Five fires were larger, including fires of 275, 257 and 434 square miles in 1875, 1755 and 1865, respectively, as documented by Bud Heinselman in his 1996 book, *The Boundary Waters Wilderness Ecosystem*.

The fire burned some old, unlogged forests of red, white and jack pine, but mostly it burned second-growth birch and aspen forests with substantial amounts of spruce, fir and pine mixed in. These

forests were part of the controversial "Portal Zone" in the south central BWCAW, which had active logging within the wilderness during the middle of the 20th century.

Perhaps this fire will help push this second-growth forest towards more natural conditions. It was a very severe fire during late summer and early fall, a common pattern for historical fires in the BWCAW, so that it fits right in with the fire occurrences of the 18th and 19th centuries.

The unusual time period in the history of the BWCAW was the 20th century, which had less fire due to climate change, fragmentation of the landscape surrounding the wilderness, and fire suppression. With the three large fires of the last decade, the fire regime of the BWCAW has reawakened. Whether this heralds a return to the old regime, or a much more frequent fire regime that we expect with

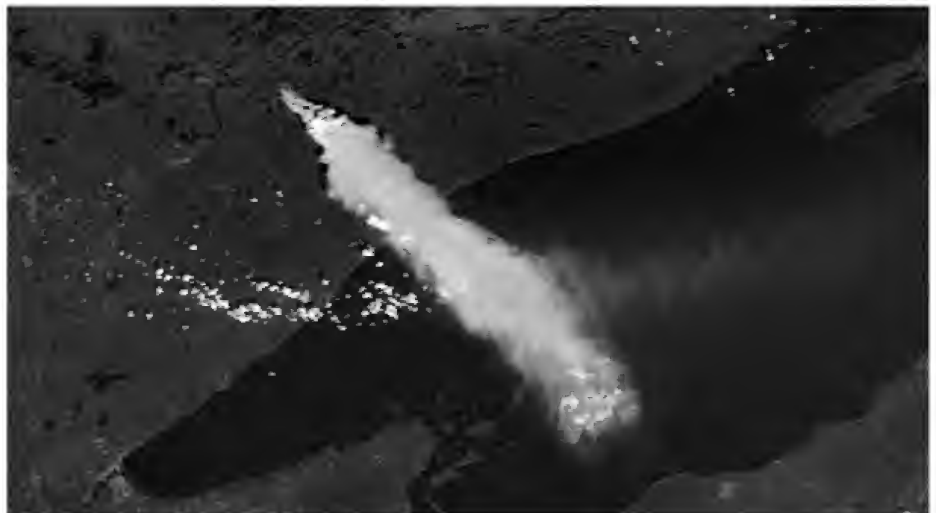
a warming climate remains to be seen.

Fires kill trees by: (1) total crown scorch and char of the entire above ground portion of the tree in crown fires (like most of the Pagami Creek fire); (2) by scorching the roots in places with very shallow or dried-out organic soils; (3) by girdling the base of the trunk by scorching cambium under the bark (Note that scorch means exposure to heat that kills live tissue while char means death and blackening of tissue by direct contact with flames.); and (4) scorching the foliage of conifers through convection and radiant heat rising through the canopy from intense surface fires. (Deciduous trees can be crown-scorched but usually survive loss of foliage.)

Jack pine is susceptible to intense crown fires, sacrificing adults and surviving as seeds from serotinous cones.

In contrast, red and white pine do not have several years' seed production stored up in the canopy waiting for a fire. Instead, they grow in areas that are more likely to have surface fires, have well insulated trunks with thick bark, and hold their foliage high above scorching heat, thereby surviving fires as adults that can live for centuries and continue to reseed the area.

The duration of radiant heat



Aerial view of Pagami Creek fire, showing smoke plume crossing Lake Superior. Photo courtesy of NASA.

around the base of the trunk is key for tree survival. Trees with bark 1, 2, and 3 cm thick can survive heat for three, 12 and 26 minutes, respectively. (Old red and white pines usually have bark 3 cm thick.)

Heat can last much longer on the leeward side of a tree trunk from an approaching fire, so that trees are often fire-scarred on that side. Under typical conditions, surface fires with flame lengths of one, five, and 10 feet, can scorch foliage two, 23 and 63 feet above the ground. Red and white pines with less than 50 percent of their foliage scorched usually survive, but mortality rates go up dramatically as the percent scorched rises above 50 percent.

Like most fires over the last four centuries, The Pagami Creek fire killed or severely burned most of the landscape, killing the jack pine, spruce, and above-ground trunks of birch and aspen, but also had small inclusions of less intense fire along lakeshores, cliffs and swamps, where mature pines will survive.

Steve Saupe is new MNNPS board member

by Stephen G. Saupe

Ever since reading Euell Gibbon's books when I was in high school, I have been a self-professed "plant wienie." After learning that so many wild plants were edible, I became fascinated by what made other plants and fungi poisonous and decided to conduct graduate studies in phytochemistry. I received my Ph.D. in botany from the University of Illinois (Urbana-Champaign), where the main focus of my research was cyanogenesis, the production of hydrogen cyanide, by fungi, bacteria and plants.

Following my graduate studies, I accepted a faculty position in the joint biology department of the College of St. Benedict and St.

John's University. I teach a variety of classes, including introductory biology (for majors and non-majors), plant systematics, plants and human affairs, and plant physiology. I've also taught plant systematics at the University of Minnesota Lake Itasca Biological Station. I've completed numerous floristic studies in Minnesota, including field work to help establish a local nature preserve, served as the chief botanist for a local BioBlitz, and have even helped with a few DNR grassland surveys. My current research is focused on the airborne pollen and mold spores that occur in Central Minnesota, as well as the ecophysiology of plants and fungi.

I am currently the curator of the CSB/SJU Bailey Herbarium, which just celebrated accessioning our 30,000th specimen. I also serve as the director of our Melancon Greenhouse, the chair of the St. John's Arboretum Council, and I recently completed a term as a member of Minnesota DNR Commissioner's Advisory Committee to the SNA program. As you will learn at the March meeting, I have been involved with making maple syrup at St. John's for more than a decade. I even teach a course on maple syrup production at St. John's/St. Ben's and serve as the newsletter editor for the Minnesota Maple Syrup Producers.

In my spare time, I am the clerk of Avon Township and have a small hobby farm where my wife Linda and I raise sheep, hazelnuts, blueberries and other assorted fruits and veggies. Although I've been a member of the MNPS for as long as I remember, I'm sorry to say that I haven't been able to attend too many meetings. I hope to change that and look forward to meeting you in the coming months and years.

Field trips planned

For information on upcoming field trips, go to the website: www.mnnps.org

MNNPS is 30

by Scott Milburn, president

This year marks the 30th anniversary of the Minnesota Native Plant Society. The idea was first formulated by Peg Kohring, Emily Nietering, Heidi Van't Hof, Jan Grew, and Chris Soutter. That first board consisted of six members, with Peg serving as the first president and Welby Smith as vice president. In 1982, the individual membership fee was \$7. The current individual fee, \$15, is slightly cheaper, when inflation is considered.

Much has changed during this time, yet much has remained the same. The mission of the Society is as important as ever, particularly for the conservation of native plants.

During these 30 years, we have seen the formation of the Minnesota County Biological Survey, the development and modifications of the official state rare species list, and the passing of the Legacy Amendment. This amendment was extremely important, given the political opposition by various anti-tax groups. These three items will have a lasting influence in the next 30-year period.

Of concern today is the Outdoor Heritage Fund (OHF) portion of the Legacy Amendment. There is supposed to be a common vision shared by those on the OHF council, which is responsible for appropriating the funds generated by the new sales tax. Perhaps this initial vision is too grandiose, considering the anticipated revenue stream.

It is time to reassess the goals and vision at this early stage and determine what is realistic. We need the best and brightest involved — individuals who think beyond their own lifetimes, rather than those more concerned with pressure mounted by special-interest groups. The question should be: Are we truly leaving a legacy for future generations?

Do we love our lakes?

by Darby Nelson. He earned his Ph.D. in aquatic ecology from the University of Minnesota and taught biology and environmental science at Anoka-Ramsey Community College for 35 years. Dr. Nelson served three terms in the Minnesota Legislature, is the former board president of Conservation Minnesota, and also served two years on the Lessard-Sams Outdoor Heritage Council. This article is an excerpt from his talk at the Nov. 3, 2011 MNNPS meeting.

We say we love our lakes, and the crowded shores and the crush to buy lakeshore at astronomical prices suggest we speak truth. Yet our lakes deteriorate, and much of the deterioration results from our own actions. What gives?

The Environmental Protection Agency's National Lake Assessment discovered that 45 percent of our nation's lakes and 80 percent of urban lakes do not meet water quality standards.

Normally, we protect what we "love." My puzzlement over this paradox finally bubbled over. I undertook a journey of exploration to investigate this, a journey that led to the writing of my book, *For Love of Lakes*. The journey takes us to large lakes and small, from Minnesota to Canada, Illinois, New England, and ultimately, Walden Pond. Thoreau's ghost peaked over my shoulder throughout.

My bio as an academic, not surprisingly, led me to expect that maybe people simply lack adequate understanding of lake ecology. Maybe essayist Scott Russell Sanders, has it right: "We protect what we love and we love what we understand."

So, let's take a highly selected peek at lake natural history and at some of the less familiar aquatic life forms: plankton, micro-crustaceans, aquatic insects, and freshwater sponges. It was during snorkeling experiences that I discovered Eden, the aquatic plants.

An excerpt from the "Discovering Eden" chapter addressing pondweeds: "I now enter a gathering of skinny stemmed aquatic plants

of a group called 'pondweeds.' 'Weed.' What an unfortunate and misleading name for these plants. Language matters. Before being seen, before revealing anything about their lives and relationships, they stand condemned. Useless. Nuisance. Undesirable. 'Pondweed' is ... the name of a large and grand family of aquatic plants known more technically as the *Potamogetons* (from Greek: Potamos, river and geiton, neighbor). How different our perception of these plants might be had we retained the Greek root and called it 'pond neighbor.' What power the namers-of-things can have over attitudes."

Perceptions determine behavior. Do we perceive lakes differently than terrestrial systems? The contrast between the two is stark. Expose beginning ecology students to a woods and, in a matter of a few hours, they typically come to understand the basic ecological dynamics of the place — because they can see it. Take them to the shore of a lake and they typically see shore vegetation, often shore birds. They also see the lake's surface. But they are unable to see the remaining 99 percent of the lake. We are visual creatures. Our perceptions of lakes are grossly inadequate to produce accurate lake understandings.

Surely, lack of understanding of lake ecology contributes to the paradox. But it soon became clear that to understand the lake-human paradox required a peek into human nature. My discoveries are surprising.

So what are the problems our

lakes face? And what can we do about them?

The EPA National Lake Assessment identifies major stressors: lake shore habitat loss, loss of physical habitat complexity, excess nitrogen and especially phosphorus, lake shore disturbance including sedimentation, aquatic invasive species, non-point pollution in general, among others. The Lake Volney story shows we can make a difference for lakes.

Is a buckthorn disease here?

During research to identify biocontrol insects for buckthorn, a phytoplasma disease was detected in potential biocontrol insects and *Rhamnus* species in Europe. Researchers need to know if this phytoplasma is already present in North America.

Roger Becker, Ph.D., Extension agronomist and weed scientist, Department of Agronomy and Plant Genetics, University of Minnesota, is leading the search for the disease on common/European buckthorn (*Rhamnus cathartica*) in Minnesota.

Symptoms of the disease include witches' brooms, red or yellow leaves, and deformed or crinkled leaves. If you spot a buckthorn with these symptoms, contact Dr. Becker at becke003@umn.edu

Gift expands refuge, will fund easements

The Nature Conservancy has given 95 acres of land in Burnsville to the U.S. Fish and Wildlife Service. This land will be added to the Minnesota Valley National Wildlife Refuge. The gift is valued at \$515,000.

A credit of that amount will be used by the USFWS to purchase easements for prairie and wetlands in South Dakota.

Plant Lore

by Thor Kommedahl

What is pasque flower?

Pasque flower is *Anemone patens* in the buttercup family, native to Minnesota. It is also called *Pulsatilla patens* (USDA).

How did it get its names?

Pasque comes from the French passé-fleur but was changed to pasque (from an Old French word for Easter) because of its early flowering. *Anemone* was a name used by Theophrastus, possibly a corruption of Naaman, a Semitic name for Adonis, or a corruption of an invocation to the goddess of retribution, Nemesis. *Patens* means spreading out from the stem (clumps). *Pulsatilla* (quiverer) describes the pulsating movement of plants in the wind, so it had an alternate name of windflower.

What does the plant look like?

Flowers appear before leaves and consist of five to seven white to blue or purple, petal-like sepals. Stems (hollow), leaves, and buds are covered with silky hairs. Leaves are deeply cut. Plants are six to 10 inches tall and bear fruits (achenes) with feathery plumes. As a perennial, the plant grows in clumps from a thick taproot.

Where do these plants grow?

They grow in dry prairies in southern and western counties of the state.

Is the plant medicinal or poisonous?

Once used in homeopathic preparations, it is no longer recommended for human use. Blackfoot Indians used plants to induce abortions and childbirth. The leaves cause skin to blister. Taken internally, cardiogenic toxins slow the heart rate.

Has it any economic uses?

It is grown in gardens in full sun as an early spring flower and thrives in rock gardens.



Close-up of Anemone patens shows stamens and pistils. Photo by Elizabeth Heck.



Anemone patens (pasque flower) loose and tight clumps of flowers. Photos by Peter Dziuk.

Prairie Enthusiasts plan conference

The Prairie Enthusiasts' annual conference, "The Journey to Prairie Preservation," will be Saturday, Feb. 25, at UW-Stout in Menomonie, Wis. It will combine technical and basic prairie restoration information and education.

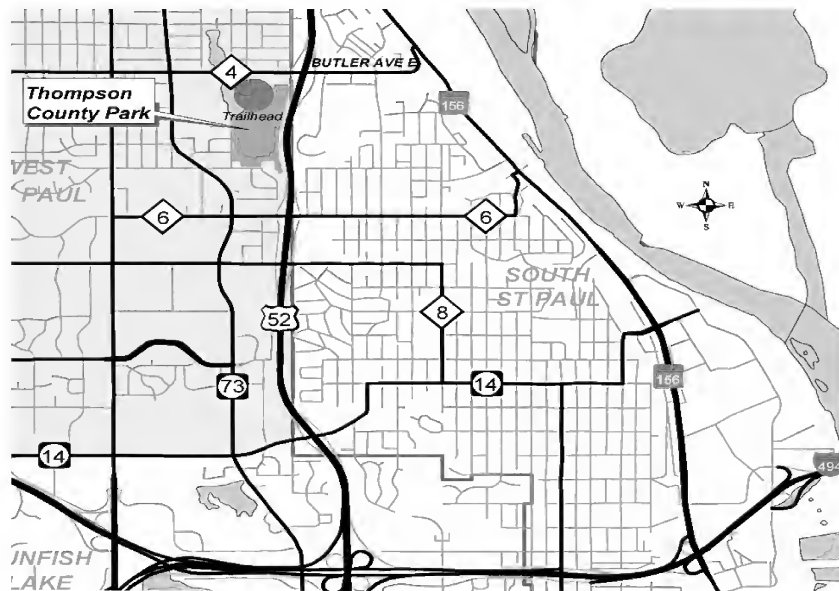
Featured speakers will be Stephen Packard, conservationist leader of the Chicago Wilderness, and Dr. Doug Tallamy, author and professor at the University of Delaware. For additional information and to register, go to <http://theprairieenthusiasts.org>

Minnesota Native Plant Society
P.O. Box 20401
Bloomington, MN 55420

Winter 2012

Thompson County Park

360 Butler Ave. East, West St. Paul, MN 55118



Directions:

Take Highway 52 to the Butler Ave. E. exit in West St. Paul.
Go west on Butler 0.2 mile to Stassen Lane.
Go south on Stassen Lane to Thompson County Park.



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June 7: “Minnesota’s State Prairie Plan: The Conservation of Minnesota’s Most Threatened Major Habitat Type,” by Steve Chaplin, The Nature Conservancy. **Plant-of-the-Month:** Whorled milkweed (*Asclepias verticillata*). **Spring Plant Sale: See article on page 2.**

Oct. 4: To be announced.



Asarum canadense (wild ginger) that Ken Arndt is potting for the June 7 native plant sale.

Carmen Converse receives lifetime membership award

Carmen Converse is the 2012 recipient of a lifetime membership in the Minnesota Native Plant Society. She received the award during the March Symposium. Following are the comments of award presenters Lee Pfannmuller, state planning coordinator, Audubon Minnesota; and Barbara Coffin, associate director of adult education programs, Bell Museum of Natural History.

Carmen’s accomplishments in the field of natural history over the past few decades have been nothing short of astounding. Although her contributions precede her engagement and leadership with the Minnesota County Biological Survey, it is for the latter that she is best known. In 1987, this fledgling program started with a little over \$100,000 and a couple of ecologists documenting native prairie communities in the Red River Valley.

But under her leadership, beginning in the early 1990s, the program has grown tremendously to include a staff of some of the best plant community ecologists, plant taxonomists and zoologists in the Upper Midwest. From a budget of just over \$200,000 in the early 1990s, the annual budget is now nearly \$1.5 million, supporting a diversity of field work, conservation efforts and educational products.

During her tenure:

- More than 19,000 records of rare species and native plant communities have been collected and entered in the Natural Heritage Information System;
- Map polygons for over 10,000 MCBS sites of Biodiversity Significance are publicly available;
- Species never previously known to occur in the state have been found;
- Maps depicting MCBS results are available to resource managers throughout the state;
- Numerous quality publications have and continue to be produced, including a *Guide to the Native Habitats of the St Croix River Valley and Anoka Sand Plain*, and the collection of three *Field Guides to the Native Communities of Minnesota*.

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Welcome, new members

The Society gives a warm welcome to 39 new members who joined during the first quarter of 2012.

Listed alphabetically, they are:
Kathy Ahlers, Minneapolis;
Marilyn Andersen, Maplewood;
Barbara Coffin, Minneapolis;
Marcel Derosier, Arden Hills;
Stephanie Erlandson, Inver Grove Heights;
Don Farrar, Ames, Iowa;
Kelly Feyler, Hastings;
Tiffany Forner, Columbia Heights;
Ron Gamble, Dexter;
Bryan Harvey, Aitkin;
Rosanne Healy, St. Paul;
Margaret Hibberd, St. Paul;
Kirsten Howe, West St. Paul;
Melinda Kjarum, North Mankato;
Andy Kranz, Winona;
Lake Harriet Montessori, Minneapolis;
Gunda Luss, Minneapolis;
Meghan Manhatton, St. Paul;
Katie McCann, Plymouth;
Steven McKay, Burnsville;
Beverly McLaughlin, Isanti;
Sandra Nussbaum, Minneapolis;

Jon Peterson, North Mankato;
Tony Randazzo, Minneapolis;
Tony Reznicek, Ann Arbor, Mich.
Nancy M. Rose, Minneapolis;
Jessica and Eric Schultz, Plymouth;
Terry Serres, St. Paul;
Greg Silverman, Minneapolis;
Geri Sjoquist, Rosemount;
Katy Smith, Crookston;
Richard Stich, Remer;
Kim Thomas, Apple Valley;
Megan Ulrich, Renville;
Anita Volkenant, Montrose;
Barbara Walther, Hastings;
Tim Whitfield, St. Paul;
Robert Wolk, Minneapolis.

MNNPS has nine lifetime members

We thank our nine lifetime members for their support. In order, they are:

Jason Husveth, Scandia, 2008;
Pamela Marie Deerwood and John Arthur, Hopkins, 2009;
Daniel Jones, Northfield, 2011;
Stewart Corn, St. Paul, 2011;
Dean Doering and Lisa Scribner, 2011;
William E. Faber, Brainerd, 2012;
Anna Gerenday, Afton, 2012.

Annual plant sale is June 7

by Ken Arndt, plant sale chair.

The time to prepare for this year's MNNPS annual plant sale is now. The sale helps raise money for the Society and is a great opportunity to share native plants. The sale is held at the June meeting and follows the evening speaker's talk. It is held outside, on the patio area near the lodge entrance. We ask that all donated plants be dropped off by about 6 p.m. so our volunteers will have plenty of time for setup.

The sale is open to members and non-members. Those who either help with the sale or donate plants will get to have first pick. We ask that only native plants from Minnesota be included. Do not bring any cultivars (horticultural selection) of native plants (e.g. 'Goldstrum' Black-Eyed Susan). Plants should come from your own property, or private property with that owner's permission — not from public property. Bring your plants in typical nursery containers with adequate soil and water. Label them with both common and scientific names. Pricing will be done by the volunteers. We will have plant identification guides available prior to the sale to assist with labeling plants correctly.

Volunteers are needed to help with setting up and taking down the sales area and assisting folks with their plants. To volunteer, contact Ken Arndt at karndt@ccesinc.com.

MNNPS Board of Directors

President: Scott Milburn, scott.milburn@mnnps.org

Vice President: Shirley Mah Kooyman, shirley.mah.kooyman@mnnps.org

Secretary, program coordinator: Andrés Morantes, andres.morantes@mnnps.org

Treasurers, membership data base: Ron and Cathy Huber, ron.huber@mnnps.org

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Elizabeth Heck: board member, webmaster, elizabeth.heck@mnnps.org

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Stephen G. Saupe: board member, stephen.saupe@mnnps.org

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Technical or membership inquiries: contact.mnnps@mnnps.org

Minnesota Plant Press editor: Gerry Drewry, 651-463-8006; plantpress@mnnps.org

Questions? Go to our website: www.mnnps.org

Carmen Converse

Continued from page 1

And this is only the tip of the iceberg of Carmen's contributions. Statewide, there isn't a development initiative or conservation action that doesn't include some element of information from the County Biological Survey.

In the 1980s, integrating information on native plant communities or rare species in the everyday work of wildlife biologists, foresters, fisheries biologists or park resource managers was challenging at best. Today, it is a common practice because of the tireless efforts of Carmen.

Today, a field forester doesn't just classify a forest stand as aspen — he or she decides if it is a Central Dry-Mesic Oak Aspen Forest or a Central Dry Oak-Aspen Pine Woodland, and information on the species occurring in the subcanopy and herbaceous layer are used to help make that decision.

Today, a park resource manager decides if a trail that is planned through the park needs to be routed around a patch of rare native orchids.

Today, a wildlife manager designing a restoration effort on a shallow lake inquires about the native aquatic plants that occur in the lake. The County Biological Survey is at the heart of these changes.

Nearly 25 years after she began leadership of the County Biological Survey, Carmen's commitment to her staff and to the conservation of Minnesota's natural resources has been unwavering. It is a great honor to bestow this award on her today.

Friends School plant sale

The annual Friends School plant sale will be May 11 - 13 at the State Fair Grandstand. Online catalog: www.friendsschoolplantsale.com

New botanical nomenclature rules are now in effect

by Shirley Mah Kooyman, plant taxonomist and vice president of MNNPS.

When a new plant species is discovered and named, it is published with a scientific name in the binominal system of a genus and species along with a description of the plant written in Latin and a supporting "Type" specimen of the species described.

This practice began in 1753 with the publication of *Species Plantarum* by Carl Linnaeus. Plant name changes are not decided at random by botanists with little to do, as some people presume. Instead, there is an International Code for Botanical Nomenclature that outlines the rules for when a name is accepted or rejected.

Every six or seven years the International Botanical Congress meets to make decisions regarding plant names. The decisions are then published in a book for all to see. The earliest plant name, for a particular species that is validly published, is the accepted name unless other evidence indicates differently. Since 1908, descriptions had to be written in Latin as required by the International Code for Botanical Nomenclature. Now, all of that has been changed effective at the start of the year 2012.

In July 2011, members of the International Association for Plant Taxonomy and the International Botanical Congress met at the nomenclature conference in Melbourne, Australia. It was voted on and accepted that beginning January 1, 2012, plant descriptions no longer had to be written in Latin. Instead, the descriptions could be in English or Latin. It was also voted and approved that electronic publications would count

as being "validly published." The scientific name concept (genus and species) would stay intact and not be changed by the new rule. The decision to make these changes came about as a method to facilitate a quicker way of getting new species described. Habitats are rapidly being destroyed, and species are becoming lost before they are officially acknowledged.

For additional information, the following references are cited.

Miller, James S. 2012. "Flora, Now in English," published in *The New York Times* — Jan. 22, 2012.

Palmer, Kim. 2012. "Botanical Bombshell," published in *StarTribune*, Home and Garden Section — March 7, 2012.

Walford, Charles. 2011. "Plants no longer to be given Latin-only name 'so they can be classified before they die out,'" published by *Mail Online* (<http://www.dailymail.co.uk/sciencetech/article-2077542/Plants-longer-given-Latin-classified-die-out.html>) — Dec. 22, 2011.

Wingate, Marty. 2011. "Why Plant Names Change," published by northwestgardennews.com — Feb. 11, 2011.

WaterFest 2012 is June 2 at Lake Phalen

Waterfest 2012 is a free Ramsey County family festival to celebrate clean lakes. Activities on land and on the water include hands-on learning about rain gardens, shorelines, watersheds and ecosystems. The event is sponsored by the watershed district, county, cities and other partners. For more the information, call event manager Debbie Meister (651-647-6816) or Louise Watson (651-792-7956), or visit the website at rwmwd.org.

Natural history of maple syrup

by Stephen G. Saupe, Biology Department, College of St. Benedict/St. John's University, and a MNNPS board member. This is a summary of his March 1, 2012, presentation for the Society.

According to an Anishinabe legend, the Great Spirit made life easy by providing abundant game and crops, and even filling a maple tree with a thick sweet syrup which could be drunk by simply breaking off a branch and allowing it to drip into your mouth. Manabohzo was concerned that the people were spending too much time drinking syrup, so he collected some water from the river in a birch basket and poured it into the tops of the trees to thin out the syrup. He also decreed that the trees would only flow for a short time in the spring.

There are many truths in this tale. First, we learn that maple syrup is an ancient crop; in fact, it is one of the relatively few uniquely North American crops. The legend also rightfully attributes the discovery of syrup-making to the Native Americans and emphasizes that maple sap is dilute (about 2 percent sugar) and flows in the springtime when the day and night temperatures fluctuate above and below freezing, respectively.

The mechanism by which sap flows from a maple is not fully understood, but is related to temperature. During the cool night, gases contract in the stem. This reduces the pressure, sucking water from the roots. The water freezes inside hollow fiber cells, trapping gases in ice bubbles. The following day, as the temperature warms, the ice melts and the gases expand, which along with the gravitational

pull of water in the stem, provides the pressure that pushes sap out of the taphole.

One flaw with this physical explanation for sap flow is that sucrose in the vessel sap shouldn't be required for sap flow — but it is! Recent research suggests that fibers, which surround the vessels, act like a membrane to allow for osmotic uptake of water and the concomitant development of pressure that further contributes to the stem pressures forcing sap out of the tree. Stay tuned for more advances in our understanding of sap flow physiology.

To make syrup, a hole (7/16th-inch or preferably 5/16th-inch) is drilled about two inches into the sap wood. Maples (*Acer*), including *A. saccharum*, *A. nigrum*, *A. negundo*, *A. saccharinum*, and *A. ginnala*, are among the few trees that produce sap in the spring. Apparently this is due to their perfect combination of air-filled fibers and fluid-filled vessels. Once tapped, a spile is inserted in the hole and a bucket, bag, or vacuum tube is attached to collect the sap. The dilute sap must then be concentrated into syrup.

The Native Americans originally dropped hot rocks into hollowed logs containing sap. Allowing sap to freeze and then removing the ice was likely also used, since when the water freezes it leaves behind a more concentrated sugar solution. These techniques gave way to boiling sap in batches in metal kettles or flat-bottom pans, and ultimately to the continuous-flow evaporators now in use by larger operations. Because cooking sap is so energy-intensive, various improvements, including

blowers in the fire chamber, sap pre-heaters, and reverse osmosis, have evolved to conserve fuel and save time.

To determine when the syrup is ready to bottle, producers measure its density with a hydrometer, or sugar concentration with a refractometer. The temperature of the boiling syrup can also be used, since finished syrup boils at 7 degrees F above the boiling point of water. If the syrup is cooked too long, it tends to crystallize, but if it's not cooked long enough, then it may develop mold in storage. The syrup must be filtered before it is bottled, because during cooking a precipitate called sugar sand, or nitre, forms. This material is the result of the interaction of various trace components of the sap and is largely comprised of calcium salts, including calcium malate.

As the Native Americans have long known, maple sap is relatively dilute, approximately 2 percent sugar, whereas finished syrup is 66 percent. The Rule of 86 expresses the relationship of sugar concentration between maple syrup and sap. To determine how much sap is required to make a gallon of syrup, divide 86 by the sugar concentration of the sap.

Thus, it will take 43 gallons of sap with 2 percent sugar ($= 86 / 2$) to make a gallon of syrup. Or in other words, a producer must boil off 42 gallons of water to produce one gallon of syrup. This is the source of the commonly cited statistic that it takes approximately 40 gallons of sap to make one gallon of syrup.

Although most maple sap is now used to make syrup, the Native

Americans and early settlers continued cooking the syrup to produce maple sugar because it was easier to transport and store.

The syrup grading system is currently in flux but will soon include four main grades available for sale to consumers: Golden, Amber, Dark, and Very Dark. They differ in color and flavor; a consumer should taste the various grades to see which he/she prefers. The quality of the syrup is a function of any microbial contamination of the sap before it was cooked, the biochemical constituents of the sap, and the length of time the sap was cooked.

No matter which grade of syrup you prefer, Robert Boyle was certainly correct when he wrote in 1663, the "juice that weeps out its incision, if it be permitted slowly to exhale away the excess moisture, doth congeal into a sweet and saccharine substance."

Prairie field trips

Joel Dunnette, a past MNNPS president, will lead three prairie field trips in May. The trips are listed below. For more information, contact him at jdunnette@gmail.com or call 507-269-7064.

Weaver Dunes: Saturday, May 12, 10 a.m. - 2 p.m., northeast of Weaver, Wabasha County. See sand prairie flowers on rolling terrain.

Iron Horse Prairie: Wednesday, May 30, 6 p.m. until dusk, southeast of Hayfield, Dodge County. See spring flowers, including small white lady's slippers. Rough terrain.

Chester Woods, Tuesday, May 22, 7 p.m., an Olmsted County park west of Eyota. The trip is co-sponsored by Zumbro Valley Audubon Society. See restoration of bluff prairie, oak savanna.

President's column

by Scott Milburn

I decided to take a different approach in delivering my president's column. I have always enjoyed the mainstay sports columnist and Minnesota legend Sid Hartman. I often find he lacks cohesion in his ramblings, so I figured I would follow suit.

New board members

We will have two new additions to the board this June, Steve Eggers and John Arthur. Steve is returning to the board after last serving in the late 1980s. John Arthur is a longtime member and is ready to contribute. The board terms for both Elizabeth Heck and Michael Bourdaghs end in June. We thank them for their many contributions and look forward to their continued involvement as members of our Society.

New honorary member

I would also like to bring up our honorary lifetime membership award. Only 10 people have been awarded this in the 30-year history of the Society. The board was very pleased to bestow this honor on Carmen Converse. Her contributions have been many, and the Society has much to appreciate in regards to her efforts. It was great that Barb Coffin was able to present this award to Carmen at the Symposium this year.

Successful Symposium

The Symposium was well attended. We had a great line-up, and I thank each speaker. I would also like to thank everyone involved on the logistical side, including Shirley Mah Kooyman, Daniel Jones, Otto Gockman, Jeanne Schacht, Michael Bourdaghs, Erika Rowe, Mike Lynch, Cathy and Ron Huber, Mary Nolte, and Dorothy Paddock. In all, we had 157 registered, including 10 students.

Visit a SNA

This is a great year to document

the early phenology. Maybe you have a gardening log at home, or you collect specimens for your herbarium repository of choice. I urge everyone to take the time to just observe. On that note, I would like to encourage everyone to visit a Scientific and Natural Area (SNA) this summer and report back to us and share your experience or photos.

Fiscally solvent

Our treasurer's report indicates that we are fiscally solvent. We are in a great position, and that extra money allows us more flexibility when it comes to symposium planning and other opportunities. We have had a number of requests in regards to taping presentations. That is something we would like to explore in the future.

May meeting

I would also like to promote the upcoming monthly meeting in May. Welby Smith, our state botanist, will be speaking about his newly revised *Orchids of Minnesota*. We have pre-ordered 160 copies to sell at the meeting, as well as having the opportunity to have the book signed by the author himself.

Lady Slipper Days

The two-day 2012 Lady Slipper Celebration features the arts, culture, nature and history of the lady's slipper orchid and the Lady Slipper Scenic Byway, Hwy. 39 from east of Cass Lake north to Blackduck, where the orchids grow in abundance.

Saturday, June 23, events will be headquartered in Blackduck, at the north end of the byway. They will include photo/viewing bus tours to see orchids and/or the old CCC Camp Rabideau. Sunday, June 24, the celebration moves south to the Norway Beach Visitors Center near Cass Lake. For additional information, contact Deborah Davis Hudak, Minnesota Department of Agriculture Plant Protection Division at 218-243-2058 or deborah.davis.hudak@state.mn.us

2012 field trips planned

by Ken Arndt

2012 will be another good year for a MNNPS field trip. Attending one of the field trips is a great way to see some of Minnesota's many different native plant communities, as well as meeting others who share a similar interest in native plants.

We have confirmed several trips for 2012, and they are open for registration. Additional trips will be added in the coming weeks. You can register for any of the field trips by visiting our website (www.mnnps.org) and going to the field trip page, or by attending one of our monthly meetings where sign-up sheets are available. Information for all of the field trips is posted on the website regularly as each trip is finalized.

Field trips are just one of the benefits of being a Society member. If you haven't already joined, now is the time, before the field trip you want to attend fills up. Most trips have a limited number of registrants due to the site-sensitive areas that are encountered, so registering early is encouraged. Following are MNNPS field trips planned so far for 2012.

Katharine Ordway Natural History Study Area: Friday evening, May 18, 6:30 p.m. to 8:30 p.m. Join Mark Davis (professor of biology) and Mike Anderson (associate director for the Ordway Field Station) and two professional ecologists/botanists for an evening of hiking and plant identification. This unique field station is located on the bluffs of the Mississippi River in Inver Grove Heights. Participants will learn about the different plant communities found here, observe the many native plants of the area, and enjoy the great views of the Mississippi River.

Small White Lady's Slipper Orchid: Saturday, June 2, at Regal

Meadows, near Regal, Minn. Join Steven Saupe (professor of biology at the College of St. Benedict and St. John's University and a MNNPS board member) and a regional DNR plant ecologist to see the orchids in bloom. An alternate date of **May 19** is scheduled if the Small White Lady's Slipper Orchid is blooming early. This trip is full, but you may sign up for the waiting list.

Cedar Creek Ecosystem Science Reserve: Friday evening July 27, 6 to 7:30 p.m. Join field trip leader Barb Delaney (professional botanist and MNNPS member) for an evening hike to see Ten Sedges in Ten Meters. You will see more than just ten sedges as we hike through xeric dune crests, a sand prairie, wet meadow swales, a peaty wetland, oak savanna, and dry oak forest. Microhabitat diversity will be highlighted. There will even be Cedar Creek *Carex* Checklists for you. A highlight will be the opportunity to see a state endangered species in the sedge family, tall nut-rush (*Scleria triglomerata*), along with other rarities.



Ken Arndt took this photo of a small white lady's slipper (*Cypripedium candidum*) while on a field trip.

Iron Horse Prairie SNA: Saturday Aug. 25, Steve Eggers (senior ecologist for the St. Paul District Corps of Engineers) will lead participants on a hike into Southeast Minnesota's largest remaining contiguous mesic prairie. See this fantastic prairie in full color, and see rare plants like Sullivant's milkweed (*Asclepias sullivantii*), Indian plantain (*Arnoglossum atriplicifolium*), wild quinine (*Parthenium integrifolium*), rattlesnake master (*Eryngium yuccifolium*), and edible valerian (*Valeriana edulis* var. *ciliata*). This SNA is known as one of the finest mesic prairie remaining in this part of Minnesota.

Cuyuna Country State Recreation Area: Mid-June. Malcolm and Rosemary MacFarlane will lead this trip, which will be a *Botrychium* (Moonwort/Grape Fern) hunt. Watch the website for details.

Grand Rapids region: Late summer. Go with the DNR's John Almendinger and Midwest Natural Resources' Scott Milburn. Spend part of a day exploring different native plant communities in the region. Watch for more information.

If you or anyone you know is interested in leading a field trip or has suggestions as to where they would like to see a Society trip, e-mail me at karndt@ccesinc.com. We are always looking for additional field trip leaders and co-leaders to take us into the many fantastic parts of Minnesota and the region.

Treasurers' report

On March 31, 2012, the Society had \$27,483.04 in assets. This included \$18,462.09 in the checking account, \$8,965.95 in CDs, and \$55 cash. From Jan. 1 through March 31, income totaled \$9,066.34; expenses were \$6,002.73, for a net gain of \$3,063.61. Dues totaled \$2,964.20. Symposium income was \$5,892; its expenses were \$5,109.18.

Plant Lore

by Thor Kommedahl

What is wild geranium?

Wild geranium is *Geranium maculatum* in the geranium family—along with the introduced garden and houseplant geranium (*Pelargonium* sp.).

What do its names mean?

Geranium means crane (Greek *geranos*) and, according to Dioscorides, the fruit resembles the head of a crane after the petals fall off. This led to its other name, cranesbill. *Maculatum* means spotted and refers to the light blotches seen on older leaves.

What does the plant look like?

It is a perennial and overwinters as stout rhizomes covered with scars. Leaves are deeply five-parted and hairy; flowers are rose-purple to pale or violet purple with five petals and 10 stamens; flowers last until about June. The fruit is a capsule of five sections, each with one seed. On ripening, the capsules explode to shoot seeds several feet.

Where does the plant grow?

It is native in dry to moist woods in eastern counties of Minnesota. Plants often grow in clumps and go dormant in early summer.

Is it medicinal or poisonous?

Plants are rich in tannins. Rhizomes are astringent and can stop bleeding. Powdered roots were once applied to canker sores. Entire plants were boiled to make tea for diarrhea. Indians used it to treat venereal and other diseases. It was once listed in the *U.S. Pharmacopeia* and the *National Formulary* as a folk remedy. It is neither poisonous nor edible.

Has it any other values?

It is a good, woods-y-garden plant for spring flowers. Bees visit flowers; doves, quail, and deer feed on seeds.

Conservation Corner

by Beth Markhart (Nixon)

Long-term conservation requires passionate advocates. Typically, older, accomplished scientists and citizens who best articulate the argument for conservation will tell you about their childhood source of passion for conservation. If this is to continue to be the source of inspiration later in life, then opportunities for children to deeply connect their feelings with natural world experiences is an imperative now.

One the most prescient strategies for this is the through the Nature Deficit Disorder (NDD) movement. Minnesota offers exciting news about NDD initiatives. The web news summarized here can inform you and hopefully inspire action.

The Will Steger Foundation has received the annual Environmental Initiative finalist award in environmental education for Minnesota's Changing Climate: Engaging Students in Environmental Stewardship. This program was developed with the belief that environmental stewardship and action begins with a local connection and sense of appreciation, or environmental sensitivity, towards the natural environment.

Don Shelby, an advocate for building environmental awareness, is speaking on NDD to church communities. NDD continues to break into the mainstream education infrastructure, and NDD curriculum is being taught to teachers through the Minnesota Association for the Education of Young Children. An AARP blogger offers avenues for readers to build bridges in nature between older and young persons. University of Minnesota initiatives include a webinar on natural places and youth development by Rebecca Meyer, an Extension educator.

Focusing on NDD is a long-term development strategy for the MNNPS. The Society has a role to play, perhaps by initiating field trips that bring our own young children, as well as other children, into the field.



Wild geranium (Geranium maculatum) photo by Peter Dziuk.

Minnesota Native Plant Society
P.O. Box 20401
Bloomington, MN 55420

Spring 2012

Thompson County Park

360 Butler Ave. East, West St. Paul, MN 55118



Directions:

Take Highway 52 to the Butler Ave. E. exit in West St. Paul.
Go west on Butler 0.2 mile to Stassen Lane.
Go south on Stassen Lane to Thompson County Park.



Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

www.mnnps.org

Volume 31 Number 3

Summer 2012

Monthly meetings

Thompson Park Center/Dakota
Lodge

Thompson County Park
360 Butler Ave. E.,
West St. Paul, MN 55118

Programs

The Minnesota Native Plant Society meets the first Thursday in October, November, December, February, March, April, May, and June. Check at www.mnnps.org for more program information.

6 p.m. — Social period

7 – 9 p.m. — Program, Society business.

Oct. 4: Program to be announced. Check the website (www.mnnps.org) for details.

MNTaxa lists state vascular plant species

MNTaxa is the Minnesota DNR's list of all vascular plant species that have been documented in the state.

For each species, MNTaxa provides the full scientific name, whether the species was introduced to Minnesota, current endangered species status, and the counties and subcounties in which the species has been documented.

The DNR uses MNTaxa to organize data in various plant and vegetation databases and to generate regional or county checklists for survey work, projects, and reports. It is available as a statewide checklist or as a county record checklist at mndnr.gov/eco/mcbs/plant_lists.html

Prairie Conservation Plan is implemented

by Steve Chaplin, senior conservation scientist, The Nature Conservancy.

Native prairie once covered as much as 18 million acres of Minnesota. A hallmark of this prairie was its rich diversity of grasses and flowering forbs, often as many as 200 species per acre. Now, most of the native prairie is gone, with only about 235,000 acres surviving. Unfortunately, the loss and degradation of prairie and other grasslands continue, due to agricultural conversion driven by high crop prices, the expiration of Conservation Reserve Program (CRP) contracts, and new technologies for rock removal and water drainage.

The Minnesota Prairie Conservation Plan, developed by 10 conservation agencies and organizations, is a response to these losses. The initial draft was completed in 2011 and is now being implemented (See http://files.dnr.state.mn.us/eco/mcbs/mn_prairie_conservation_plan.pdf) The plan calls for three approaches: conservation of prairie core areas, development of corridors connecting the core areas, and local projects within the surrounding agricultural landscape.

Prairie Core Areas

Thirty-six areas with concentrations of native prairie have been identified in Minnesota. These are special places where some of our prairie heritage (the prairie biota and its physical habitat) still exist and where grass-based agriculture remains part of the economic base. These places range from 5,000 to 300,000 acres in size, totaling about 1.6 million acres. Together they capture 77 percent of the native prairie in the prairie region of the state. The goal for these core areas is to maintain or restore 40 percent to prairie or grassland and 20 percent to wetland. The remaining 40 percent would continue to be used for row cropping and other development.

Prairie Corridors

Even if all of the prairie core areas are protected, many prairie plants and animals will have difficulty moving between them to recolonize or claim new habitat. Such movement is essential to maintain genetic integrity and population viability, especially

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Treasurers' report

Treasurers Ron and Cathy Huber report that on June 30, the Minnesota Native Plant Society had total assets of \$29,170.03. For the first six months of this year, income totaled \$13,867.51; expenses totaled \$10,087.46. Net income was \$3,780.55.

Major income items were dues, \$2,348; symposium, \$5,934, and orchid books, \$3,593.55. Major expenses were symposium, \$5,451.78, and orchid books, \$3,231.99. Communication expenses (newsletter, membership directory, meeting postcards, member packets, and postage) totaled \$905.59.

Sale income down

Proceeds from the 2012 June Plant Sale totaled \$368.50, including \$331.50 from the sale and \$37 from the plant auction. This total is the lowest in the last seven years. The highest total was \$911 in 2006; the previous low was \$416 in 2009. The weather reduced attendance at the meeting and sale.

Welcome, new members

The Society gives a warm welcome to 15 new members who joined during the second quarter of 2012.

All are from Minnesota. Listed alphabetically, they are:

Steve Chaplin, Roseville;
Ross Collins, Excelsior;
Brian Fewell, Falcon Heights;
Laura Geris, Richfield;
Enrique Gentzsch, Minneapolis;
Gloria Gervais, Ely;
Karin Grimlund, Rushford;
Catherine Gutfleisch, Northfield;
Laurel Krause, Excelsior;
Bram and Lori Middeldorp, Northfield;
Bill and Anna Morrison, Ham Lake;
Jeanne Quillen, Pequot Lakes;
Karen Westphall, St. Paul.

Field trips

There is a waiting list for the August 25 field trip to Iron Horse Prairie. For future trips, go to the website: www.mnnps.org

MNNPS Board of Directors

President: Scott Milburn, board member, scott.milburn@mnnps.org

Vice President: Shirley Mah Kooyman, shirley.mah.kooyman@mnnps.org

Secretary, program coordinator: Andrés Morantes, andres.morantes@mnnps.org

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John Arthur: board member, john.arthur@mnnps.org

Steve Eggers: board member, steve.eggers@mnnps.org

Otto Gockman: board member, otto.gockman@mnnps.org

Daniel Jones: board member, daniel.jones@mnnps.org

Peter Jordan: board member, peter.jordan@mnnps.org

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Technical or membership inquiries: contact.mnnps@mnnps.org

Minnesota Plant Press editor: Gerry Drewry, 651-463-8006; plantpress.mnnps@mnnps.org

Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following.

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation, ecosystems.
6. Preservation of native plants, plant communities, and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops, and field trips.

Prairie plan

Continued from page 1

when confronted with the impacts of climate change. The Prairie Plan identifies a set of corridors, each six miles wide, along five geomorphological features that will connect the prairie core areas: the Agassiz Beach Ridges, Alexandria Moraine, Minnesota River, Altamont Moraine, and Buffalo Ridge. The goal for the corridors is to have at least 10 percent of each section of land (64 acres) in perennial cover as well as large (four to nine square mile) grassland/wetland complexes spaced every six miles along the corridor as “stepping stones.”

Agricultural Matrix

To maintain the full range of local genetic variability of prairie plants and animals, we will have to conserve not just the core areas but also smaller grasslands and wetlands in all parts of the state where prairie once occurred. This approach will provide small pockets of local ecotypes scattered around the state that can be the source of propagules for prairie and native plant restoration projects, the foundation of water quality and flood retention efforts, and the base of grassland-oriented recreation.

The Prairie Plan proposes that a minimum of 10 percent of each Land Type Association in the Prairie Region of the state be maintained in permanent perennial vegetation. Most of the conservation work in the Agricultural Matrix will take the form of stream buffers, grassland strips, and habitat restorations, but to achieve the maximal results, it will be important to strategically locate the projects.

Even with substantial new public conservation funding, the success Minnesota has in maintaining and restoring its prairie heritage will largely depend on private actions. In areas of the world where large areas of native grasslands have

President's column

by Scott Milburn

The Society's Board of Directors will meet later this summer to elect the officers for next year. This will be the first board meeting with our latest board additions, Steve Eggers and John Arthur. Steve is a former board member from the earlier days of the Society, and John has been an active member in recent years. They will complement the existing board and help provide an exciting year.

Looking forward to the upcoming year, we need to explore two particular topics. Besides discussing the ecology and biology of plants, I believe it is imperative that we also discuss policies and laws as they pertain to our natural resources. Specifically, I would like to provide an opportunity for us to explore the issue of School Trust Lands, as well as the push to allow cattle grazing at locations with intact prairie.

Members should question a number of the issues surrounding the School Trust Lands, including the proposed land swap of these lands within the BWCA in a House

survived, it is usually because local residents can earn a greater net return from grass-based agriculture, such as grazing livestock, than they can by tilling and annually planting the land. That will need to be the case in Minnesota as well if we want to have more than scattered public reserves and wildlife management areas.

The Prairie Plan endorses the use of public funding and lands to catalyze the growth and health of grass-based agriculture in the prairie core areas. Minnesota needs to protect its remaining prairies, but it also needs to buffer and reconnect them with restored grasslands and wetlands.

bill. We also need to look at the recent power play, where elected officials have sought managerial control over these lands. The premise behind the concept of extracting resources from a set area of land within each township was to provide financial support for schools. Times change, and so should this policy and the mindset of continuous resource extraction under the disguise of serving our children. These lands provide only \$26 per student annually.

How would politicians manage these lands? They may be under the false impression that the management of lands is a rudimentary task. For instance, consider the certification process for selling timber. The market place says timber needs to be certified. Will these politicians continue the existing practices that meet the requirements for certification? If they don't, the product sits. That may be their agenda, with the politicians moving in a direction to sell off this land to private interests.

The other issue is the push to allow cattle grazing on lands with intact prairie. This has been gaining momentum, perhaps due to a combination of group think and appeasement to a vocal industry. This is not the West, where cattle roam on large tracts of land. We don't know who is going to manage these efforts, what monitoring will take place, and what safeguards will be in place to protect the integrity of these sites. We hear about aquatic invasive species, but what about terrestrial invasives and grazing? Some may argue that invasives are of little concern, but how much practical experience do they have? Visit a place like Blue Mounds State Park where the wild carrot (*Daucus carota*) is problematic, or the remote site of Caribou WMA.

These issues should provide motivation for all of us to be engaged.

Plants are keys to quality of wetlands

by Michael Bourdaghs, Minnesota Pollution Control Agency. This is a summary of his talk at the Feb. 2, 2012, MNNPS meeting.

Minnesota has a policy to achieve “no net loss” in the quantity, quality, and biological diversity of the state’s wetlands, but how do we know if these goals are being met? A variety of wetland monitoring and assessment approaches are needed to answer this question. Tracking wetland quantity through project accounting and an ongoing DNR statewide status and trends aerial photo survey is well established. Our ability to track wetland quality, on the other hand, continues to improve as the science behind wetland quality monitoring and assessment evolves.

Wetland plant communities tend to respond in predictable patterns when exposed to human impacts such as changes in wetland hydrology, physical wetland alterations, or excess nutrient and sediment loading. Responses to these stressors include changes in the species composition and/or community structure. In severe cases, wholesale changes can occur where a native plant community is replaced by invasive species. These plant community responses integrate the effects of impacts over time. They can be measured and thus be used to indicate wetland quality.

The Minnesota Pollution Control Agency (MPCA) has an active research program to develop wetland quality monitoring and assessment techniques. Most recently, the MPCA has focused on an approach called the Floristic Quality Assessment (FQA). FQA relies on a measure called the Coefficient of Conservatism (C),

which is a numerical rating from zero to 10 that reflects how restricted a particular plant species is to intact natural habitats. Species that have narrow habitat requirements and/or little tolerance to human disturbance have high C-values, and vice versa. For example, the Small white lady’s slipper (*Cypripedium candidum*) is typically only found in intact wet prairies and has a C = 10 value. Box elder (*Acer negundo*), on the other hand, can be found in many disturbed habitats outside the floodplain forests where it naturally occurs and has a C = 1 value. Metrics derived from vegetation data and the C-values have been found to be robust and reliable wetland quality indicators.

In 2007, the MPCA completed a project to assign C-values to the Minnesota wetland flora. Since then, work has progressed to develop a simplified Rapid FQA sampling approach and data driven assessment criteria that can be used to turn FQA metrics scores into meaningful categories of wetland quality for all of the wetland types in Minnesota. This will allow natural resource professionals with a moderate level of wetland botanical expertise to make rapid and scientifically robust wetland quality assessments, which can then be applied to their specific management questions.

The MPCA is currently using FQA as the primary assessment approach in a statewide wetland quality survey. Wetlands are first sampled randomly statewide. Because the sample is representative, the results reflect the overall quality of Minnesota’s wetlands. This survey, in conjunction with increased

monitoring for wetland projects, will begin to provide an answer as to whether we are achieving “no net loss” of wetland quality and biological diversity in Minnesota.

Rainwater plan transforms mall parking lot

The results of the “extreme makeover” of the Maplewood Mall parking lot will be featured at its grand opening Saturday, Sept. 15, from 11 a.m. to 3 p.m. at the east main entrance of the mall. This rainwater management project includes 16 rainwater gardens and 200 trees.

The event will include a ribbon-cutting ceremony with the Farmsworth Aerospace Magnet School marching band and student parade; tours and displays; “show and tell” with landscaping artists and experts; and photo ops with their mascot, “Leap Frog.” Grant information and applications to make over home yards will be available, as will information on a Girl Scout service project for clean water.

The mall is located at 3001 White Bear Ave. N., Maplewood. For additional information, contact Louise Watson at 651-792-7956, or go to the Ramsey-Washington Metro Watershed District website at www.rwmwd.org

Ancient seeds grown

Russian scientists have successfully grown narrow-leafed campion plants from seeds buried by an arctic ground squirrel 31,800 years ago. The frozen *Silene stenophylla* seeds were found in an ancient burrow on the banks of the Lower Kolyma River in northeastern Siberia by a Russian research team. The scientists took cells from the placentas in the seeds and grew them in culture dishes into whole plants. The plants appear identical to the present-day narrow-leafed campions, but their petals are narrower and more splayed-out.

Book review

***Native Orchids of Minnesota* is Welby Smith's newest book**

Book by Welby Smith, published by the University of Minnesota Press, 2012. Softcover, 285 pages; seven by 10-inch format; color photos, black-and-white drawings, range maps. \$34.95

Review by Ron and Cathy Huber

The sign-in sheet for the MNNPS May monthly meeting showed 126 attendees, but the actual headcount was over 140 — a new all-time record. The reason? Welby Smith gave a fascinating presentation to launch the sale of his new book, *Native Orchids of Minnesota*.

Although originally slated to be an updated edition of his first (1993) book on Minnesota orchids, this new revision is greatly expanded, treating 49 wild orchids (six additional from 1993), with emphasis on their identification, habitat, and natural history.

Exciting new discoveries are

presented on the seldom noted subterranean aspects of orchids' lives. This fascinating material is well explained in the book and was the main thrust of Welby's May program.

A one-page preface is followed by an extensive introduction. This includes basic orchid biology, the roles of mycorrhizal fungi, and habitat discussions. Two pages of "Frequently Asked Questions about Orchids" are followed by several pages of pictorial keys to orchid genera.

The following 237 pages of Genera and Species Accounts provide the real "meat-and-potatoes" of this book, enhanced by anatomical drawings, range maps, and beautiful color photos, showing details of the plants, their underground features and often their habitats.

The book concludes with a two-page phenology, seven pages of glossary, an extensive five-page bibliography, and the index.

One might expect such a lavishly illustrated book to be much higher priced, but virtually everyone can enjoy having a copy on their bookshelf. MNNPS members also received a substantial discount on the price.

Excerpt from *Native Orchids of Minnesota*

"[Showy lady's slippers] do best in partial shade or direct sunlight, not in deep shade. You will most often find these conditions in a mossy, forested swamp under a thin canopy of conifers, or sometimes in a not-so-mossy swamp under hardwoods or tall shrubs. Sometimes showys can be found in open wetlands such as seepage fens or sedge meadows. Into this last category I would put the odd roadside ditch where showys sometimes make a brief appearance. I say brief because roadside habitats tend to get scraped or graded on a regular basis."



Ditches are a favorite location for Minnesota's state flower, the showy lady's slipper, *Cypripedium reginae*. Scott Milburn took this photo on Highway 371 south of Cass Lake in Cass County in June 2012.

Stalking and finding rare native plants

by Malcolm and Rosemary MacFarlane, volunteers, Minnesota DNR County Biological Survey.

Our experience with rare native plants has been a 30-year journey with many side trips, chance encounters, frustrating attempts to acquire expertise, and a measure of dumb luck. It started with photography and ended in moonworts. There was never any grand plan. The photography was pure entertainment, at least to start. The accumulating images pushed us in directions we had not anticipated nor were we properly prepared to go. Neither of us can claim to be a botanist. But we were enticed by interests-turned-obsessions, each in its way more compelling than the last, until we found ourselves a part of a long and grand tradition of amateur botany in Minnesota.

As we acquired expertise, our interests slid slowly from the common to the rare. We were drawn through a series of obsessions with orchids, lichens, endemic species, relicts, disjuncts and species of exceptionally unique and rare habitats. We crossed paths with folks who had a wealth of unique expertise, which they shared most generously. These encounters presented us with lifelong friendships and opportunities to participate in new ways, in new discoveries.

So, by way of a very circuitous path, we found ourselves in June of last year in the middle of Koochiching County, on hands and knees, in the ubiquitous cloud of black flies, bleeding from the temples, nose to nose with a curious little moonwort. We were having the greatest time.

Part of the allure of moonworts was the flood of new information, new



***Botrychium simplex*. Photo by Malcolm MacFarlane.**

distributions, even new species. Only six percent of the moonwort records in the Natural Heritage Database predate 1990. Significant pieces of the puzzle of moonworts in North America were coming from here in Minnesota.

Each new piece of information prompted new questions. Many of these could be addressed at our level of expertise. Three of the most rare species of moonworts in Minnesota were first found in tailings basins on the Cuyuna Iron Range — *Botrychium ascendens* and *B. spathulatum* in 1998, and *B. lineare* in 2005. Could any of these be found on mine dumps as well? Yes, we looked and found two of them, *B. ascendens* and *B. spathulatum*, in 2008. And what about the Mesabi



***Botrychium ascendens*, a rare moonwort. Photo by Malcolm MacFarlane.**

Range? Yes again, we found *B. ascendens* and *B. lineare* in 2007. So, is there a chance of finding them in other habitats outside the iron range? Apparently so. We found *B. ascendens* last year all the way up in Lake of the Woods County.

In southeastern Minnesota, there was one isolated collection of prairie moonwort, *B. campestre*, from a bedrock bluff prairie in 1993. Is it likely that could be the only place it occurs in that part of the state? We searched a number of prairies over a period of six years and found 12 populations in four counties.

There were no collections of moonworts from Koochiching or Roseau counties, and only three (two species) from Lake of the Woods County. Two of those collections, dating from 1894, were from an island in the middle of the lake. But habitats looked especially good, at least to us. We spent a long weekend in each of 2009 and 2010 on the hunch that we could find them there. We did. In 2011, we applied for a contract from the

County Biological Survey, and that allowed us to spend the entire month of June.

From 2009 through 2011, we made nearly 200 collections from these three counties, including nine species of moonworts and a rare grape fern. The rarest of these were *B. ascendens*, *B. lunaria*, *B. minganense*, and *B. simplex* var. *tenebrosus*, which was unusually robust and significantly west of its known range.

Minnesota is richer in moonwort species than anyone would have predicted just a few years ago. Discoveries of species here that were thought to be limited to the western states and provinces would beg the question: might there be others? We believe that we found one in 2008, *B. pedunculosum*, on a mine dump west of Hibbing. Confirmation awaits genetic testing, but so far prospects look good.



Euphrasia hudsoniana var. *ramosior*. Photo by Peter Dziuk.

Plant Lore

by Thor Kommedahl

What is eyebright?

Eyebright is *Euphrasia hudsoniana*, in the figwort family, but the taxonomy is confusing and it may be listed as other species, e.g., *E. arctica*. Of the hundreds of described species, *E. hudsoniana* is recognized by the Integrated Taxonomic Information System.

How did it get its names?

Eyebright (*E. officinalis*) was called “Eyebryghte” by William Turner in England (1548). *Euphrasia* means “good-cheer” in reference to its use in eye lotions. *Hudsoniana* refers to its being found along Hudson Bay — and sometimes called Hudson Bay eyebright. *Arctica* (perhaps a synonym) points to its circumpolar distribution.

What does the plant look like?

It is an annual herb and has small, opposite, toothed stem leaves and white to pale-blue flowers that look like eyes. Petals have an upper lip that may be two-lobed or notched and a lower lip that is three-lobed. There are four stamens. Stems are hairy. The plant is a semiparasite

with roots attached to grasses. (For this reason some have placed eyebright in the broomrape family.)

Where does it grow?

This native species grows along the north shore of Lake Superior in rock fissures and ledges, and it blooms from June to September.

Does it have medicinal uses?

Milton in *Paradise Lost* suggested it was mankind’s first medicine:

Michael from Adam’s eyes the
film removed,
Which the false fruit, that
promised clearer sight,
Had bred; then purged with
euphrasy and rue
The visual nerve, for he had
much to see.

Eyebright has been a folk remedy for eye ailments, coughs, and earaches. Because the blossoms look like eyes, they were thought in medieval times to benefit eye maladies. Cotton Mather in Boston, 1724, remarked, “A plain Eye-bright water constantly or frequently used will continue to the eye-sight a brightness to be wondered at.” It has been reported in recent times that members of this genus contain anti-inflammatory and antibacterial compounds.



Euphrasia officinalis (above), European eyebright, is rapidly invading the Arrowhead. Photographer Peter Dziuk says it is almost identical to *E. hudsoniana*, and the two species may hybridize.

Minnesota Native Plant Society
P.O. Box 20401
Bloomington, MN 55420

Summer 2012

Thompson County Park:
360 Butler Ave East, West St. Paul, MN 55118



Directions:

Take Highway 52 to the Butler Ave. E. exit in West St. Paul.
Go west on Butler 0.2 mile to Stassen Lane.
Go south on Stassen Lane to Thompson County Park.



Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

www.mnnps.org

Volume 31 Number 4

Fall 2012

Monthly meetings

Thompson Park Center/Dakota
Lodge
Thompson County Park
1200 Stassen Lane
West St. Paul, MN 55118

Programs

The Minnesota Native Plant Society meets the first Thursday in October, November, December, February, March, April, May, and June. Check at www.mnnps.org for more program information.

6 p.m. — Social period

7 – 9 p.m. — Program, Society business.

Nov. 1: Climate Change and the Temperate-Boreal Forest Ecotone, by Dr. Lee Frelich, professor, Department of Forest Resources, University of Minnesota. **Plant-of-the-Month:** Pennsylvania sedge (*Carex pensylvanica*), also by Dr. Frelich. **Seed exchange.** (See article on page 2.)

Dec. 6: "The eastern larch beetle: Historical perspectives and current significance to forest health in Minnesota," by Fraser McKee, Ph.D. student, Department of Entomology, University of Minnesota. **POM:** Tamarack (*Larix laricina*), also by Mr. McKee.

Feb. 7: Program to be announced. Check the website (www.mnnps.org) for details.

MNNPS questions?

Go to www.mnnps.org to see the Society blog, news about field trips, meetings, and committees, and all issues of this newsletter since 1982.

Leaders give continuity to Native Plant Society

by Scott Milburn, president

Continuity has been critical to maintaining our Society as our organization moves into our fourth decade. We held officer elections at our Sept. 9 board meeting and re-elected all four officers from the last term.

I would like to point out that this will be Ron and Cathy Hubers' eighth year as treasurer, Shirley Mah Kooyman's seventh year as vice president, my seventh year as president, and Andrés Morantes' fourth year as secretary. Other positions within the organization have been held for multiple years, and in my view, that's a great thing.

New editor is needed

As I learn more about other non-profit organizations, I am extremely impressed by the workhorses in our group, from Ken Arndt and field trips, to Elizabeth Heck and the website.

Someone who really deserves appreciation is Gerry Drewry for her contribution as editor of the Plant Press. Did anyone realize that she has been in her current role since 1999?

Gerry has already been recognized by the Society with a lifetime honorary membership, but she deserves much more. Putting together a newsletter is not a

simplicistic task, especially when the editor is constantly dealing with a president's late column.

In the near future, we will need someone to step forward to take over as editor of the Plant Press. This will entail overseeing the content and format of the newsletter. It would be preferable for someone to initially work with Gerry in order to provide that needed continuity. I encourage those that are interested to contact both Gerry and me.

Issues facing Society

In looking forward to this next year and beyond, it is important to keep evaluating our trajectory. We will be discussing this more at future board meetings, but I invite the membership to speak up. In my last column, I mentioned the topics of School Trust Lands and cattle grazing on intact prairie. We need to continue exploring these issues and

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Seed exchange will be Nov. 1

Members are encouraged to collect seeds from Minnesota native plants that are growing on their own property and bring the seeds to the tables just inside the lodge before the Nov. 1 meeting.

Seeds must be packaged in envelopes or small containers and labeled with the plant's name, scientific name (if known), habitat type, location of source, and name of donor. No bulk seeds will be accepted.

Ken Arndt is in charge of the exchange. He needs volunteers to receive the seeds, help arrange them, answer questions, and take down the tables.

MNNPS welcomes new members

The Society gives a warm welcome to two new members who joined during the third quarter of 2012. Listed alphabetically, they are: Kaija Hermetag, Minneapolis; Matthew Jahnke, Duluth; Emily Peters, Minneapolis.

Treasurers' report for third quarter of year

Treasurers Ron and Cathy Huber report that income for the first nine months of the year totaled \$14,018 and expenses totaled \$12,420. This was a net gain of \$1,598.

Assets include \$17,819 in the checking account, \$8,990 in certificates of deposit, and \$55 cash, for a total of \$26,864.

Expenses included seven-months' rent, \$2,078, for Dakota Lodge. Communication printing costs, including the newsletter, membership directory, meeting postcards, and new member packets totaled \$785. Postage was \$375. Total communication costs were \$1,191.

The Hubers anticipate fourth-quarter expenses of \$2,218. These include \$1,000 for the Bud Markhardt memorial, \$505 for insurance, \$344 for communications, and \$265 for the website.

MNNPS Board of Directors

President: Scott Milburn, board member, scott.milburn@mnnps.org

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Secretary, program coordinator: Andrés Morantes, andres.morantes@mnnps.org

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Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following.

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation, ecosystems.
6. Preservation of native plants, plant communities, and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops, and field trips.

Pollination Biology of *Aplectrum hyemale* (Putty-root or Adam and Eve orchid)

by Charles L. Argue, Ph.D., research associate, Department of Plant Biology, University of Minnesota, and MNNPS member. This article is modified from his book, *The Pollination Biology of North American Orchids*, vol. 2. Springer, New York (2012).

Aplectrum hyemale (Muhl. ex Willd.) Nutt. is chiefly an orchid of moist, shady deciduous forests dominated by sugar maple, basswood, beech, and red oak. It often occurs scattered in dense aggregations and shows a preference for rich, fine-textured, loamy and slightly alkaline soils.

Capable of withstanding a wide variety of climatic conditions, it ranges from Minnesota, southern Quebec and Massachusetts to Oklahoma and Georgia; in Minnesota it is restricted to the southeastern quadrant of the state. The present account provides summary information on the genetic compatibility, breeding system, pollination mechanisms, and fruiting success of this orchid.

Leaf measurements suggest that plants must attain some minimum size before flowering, and only one or two individuals from aggregates of 100 or more may flower in a given year. In a pioneering two-year study in east central Illinois, Kevin Hogan, from the University of Illinois, Urbana, found that *Aplectrum* is fully self-compatible at the level of fruit production and that the flowers can self-pollinate (autogamy) and possibly, produce seed asexually (agamospermy)



***Aplectrum hyemale* (Putty-root) inflorescence. Photo by David G. Smith (www.delawarewildflowers.org/), used with permission.**

with no loss in seed production or viability (no inbreeding depression).

Although fruit set occurred in over 80 percent of flowers that were left to be pollinated naturally (open pollinated), pollinators were rarely seen. Only about one out of 50 flowers was visited during a five-day flowering period. The frequency of insect visits to *A. hyemale* was only about 1/4000th of what other scientists recorded at the same site for earlier blooming spring ephemerals. The difference cannot be accounted for by the fact that the flowers of *A. hyemale* produce no nectar — the visitation rates among nectarless spring ephemerals were much higher. It may relate, however, to a decrease in pollinator

availability between the blooming period for *A. hyemale* and the earlier blooming spring ephemerals.

Freshly placed pollen from another flower was never observed on the stigma. In fact, 26 hours of observation over four days revealed only about 12 individuals of the short-tongued bee, *Lasioglossum oblongum* (Lovell) visiting the flowers. Most merely landed on the inflorescences, remaining for up to one-half minute. Only five entered flowers. Each entered only one and remained about five seconds. None were observed bearing pollen either before or after the flower visit.

In one case, a bee dislodged the anther-cap, and although no pollen was removed, two pollen masses were observed to be in contact with the stigma following the bee's departure. Thus, insect-facilitated self-pollination could be a factor. Although gene flow through pollen may occur, the available data do not confirm any actual transfer of pollen between plants, and in Hogan's opinion, *A. hyemale* is routinely autogamous and perhaps, agamospermous. The very limited pollinator visitation rates in this species may have favored selection for autogamy. Another worker, Paul Catling, has also reported autogamy in Illinois and Canadian populations of this orchid.

The usual sequence of events leading to pollination was the same in open-pollinated inflorescences and inflorescences enclosed to exclude pollinators. The pollen sacs were covered by the anther-cap in newly opened flowers. On the first or second day the cap dropped off, laying bare the pollen.

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Iron Horse Prairie SNA Field Trip

by Steve Eggers, U.S. Army Corps of Engineers.

On Aug. 25, 19 botany enthusiasts met at what the Minnesota DNR website describes as the largest contiguous example of mesic tall-grass prairie remaining in Southeast Minnesota. A prairie saved, by happenstance, where two 19th century railroad tracks met and created a 35-acre triangle south of Hayfield in Dodge County.

Because it was railroad land, the acreage was never plowed and was basically forgotten until a Minnesota DNR prairie inventory of railroad rights-of-way discovered this gem long after the tracks had been abandoned.

Now purchased and managed as a Scientific and Natural Area, it is a jewel for prairie enthusiasts and supports populations of an impressive number of threatened [T], endangered [E], and special concern plant species [SC]:

wild quinine (*Parthenium integrifolium*) [E], rattlesnake master (*Eryngium yuccifolium*) [SC], tuberous Indian-plantain (*Arnoglossum plantagineum*) [T], common valerian (*Valeriana edulis* var. *ciliata*) [T], Sullivant's milkweed (*Asclepias sullivantii*) [T] and small white lady's-slipper (*Cypripedium candidum*) [SC].

I led a MNNPS field trip to Iron Horse SNA in the 1990s during the same time period. Temperatures were around 100 degrees F. and, being a prairie, there was no shade. Heat exhaustion was a constant concern with determining how long to keep the group out. This year it was a pleasant 70 degrees F. with light overcast. For photography, light overcast is preferred over bright, mid-day sun as harsh shadows are avoided. And, this being a botanically-oriented excursion, there were plenty of photographers. A good time was had by all, to my knowledge.

Participants interested in primers on grasses and goldenrods were not disappointed. Six species of goldenrods were in bloom: Riddell's (*Solidago riddellii*), stiff (*S. rigida*), gray (*S. nemoralis*), giant (*S. gigantea*), Canada (*S. canadensis*) and grass-leaved (*Euthamia graminifolia*). Grasses included big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), Canada wild-rye (*Elymus canadensis*), prairie cord-grass (*Spartina pectinata*), prairie dropseed (*Sporobolus heterolepis*), Canada blue-joint grass (*Calamagrostis canadensis*), narrow reedgrass (*Calamagrostis stricta*), Kentucky blue-grass (*Poa pratensis*), reed canary grass (*Phalaris arundinacea*) and redtop (*Agrostis gigantea*).

Also encountered was the opportunity to distinguish the common milkweed (*Asclepias syriaca*) from the threatened Sullivant's milkweed. The former is a hairy plant with very warty seed pods, while the latter is a waxy smooth plant including the seed pods, except for a few warts. Two gentians were in bloom, adding deep blue and lavender colors to the prairie patina — bottle gentian (*Gentiana andrewsii*) and stiff gentian (*Gentianella quinquefolia*).

Some of the large forbs had flowered poorly, perhaps due to the dry conditions and high temperatures preceding this point in the growing season. Nonetheless, we found a few good examples of wild quinine and rattlesnake master in bloom.

It was a treat to see state-listed species growing side-by-side, such as tuberous Indian-plantain and common valerian. Common valerian was abundant, even dominant, growing across the moisture gradient from wet-mesic to mesic prairie. Its



Sullivant's milkweed, photo by Steve Eggers.



Steve Eggers taking photo of Sullivant's milkweed (Asclepias sullivantii). Photo taken by Arlene Kjar on field trip.

range in Minnesota is limited to the southeastern portion of the state, from the lower Minnesota River Valley to the Iowa border. Is the Iron Horse SNA population of common valerian the largest in Minnesota?

At the time of our visit, knee-high to waist-high aspen (*Populus tremuloides*) shoots were present in a good portion of the prairie. Prescribed burns are an essential component of managing Iron Horse SNA to prevent aspen and other woody species from taking over. The next prescribed burn will set back the aspen, and the competition between prairie grasses/forbs and woody plants will march inexorably on.

Thanks to the Minnesota DNR, and the inadvertent preservation by the railroad system, we have this spectacular prairie to enjoy today.



Bottle gentian (*Gentiana andrewsii*), photo by Steve Eggers.



Seed pod of wood lily (*Lilium philadelphicum*), photo by Arlene Kjar.

Implement new prairie plan now, state leaders say

Tom Landwehr, commissioner, Minnesota Department of Natural Resources, and John Jaschke, executive director, Minnesota Board of Water and Soil Resources, are urging immediate implementation of the new Minnesota Prairie Conservation Plan. (This plan was described in the Summer 2012 issue of *Minnesota Plant Press*.)

The plan, which was finalized this past summer, identifies common goals among conservation organizations. It will serve as a road map for protecting, restoring and enhancing prairies for the state's primary conservation organizations. It is designed to achieve these conservation goals by:

- Permanent protection of grasslands via easements and acquisition of critical lands from willing sellers;
- Restorations, including buffer strips, native plant seeding, wetland restoration and water-level management; and
- Enhancement of prairies and grasslands through prescribed fire, conservation grazing and invasive species control.

In addition, Landwehr and Jaschke said, "we need to seek opportunities to incorporate conservation into 'working lands' — like grazing lands — so conservation can contribute directly to local economies and agricultural lands. ... Let us act now for a future where we can visit the Prairie Region and be proud to have saved our grassland legacy — and the economic and conservation benefits it supports — for many future generations."

View the plan on the Minnesota DNR website: www.dnr.state.mn.us/prairierestoration/index.html

Pollination biology Continued from page 3

On the third or fourth day, the pollen was displaced, and fleshy, white lobes covered the stigma. The generation of these lobes was the result of contact between the stigmatic surface and the displaced pollen. Catling, indeed, described a 270-degree rotation of the pollen sacs onto the stigma following degeneration of the anther cap.

Patches of this orchid are said to be clonal. If so, the genetic variability resulting from autogamy (or agamospermy) would approximately equal that resulting from pollen transfer within populations, and fruit-set could be increased with no additional reduction in genetic diversity. At the same time, the limited genetic variability reported for *A. hyemale* by several authors is not surprising in a species with a breeding system based on clonal growth and autogamy rather than outcrossing. Limited variability would, in turn, be consistent with the absence of any significant diversification in this monospecific genus.

Master Naturalist program honored

The Minnesota Master Naturalist program was named "Program of the Year" recently by The Alliance for Natural Resource Outreach and Service Programs.

The Minnesota DNR and the University of Minnesota Extension Service jointly sponsor this program. To date, more than 1,000 volunteers have been trained. To learn more, visit www.minnesotamasternaturalist.org

Book Review

New Upper Midwest aquatic plant guide is published

Aquatic Plants of the Upper Midwest: a photographic field guide to our underwater forests, by Paul M. Skawinski. The guide can be purchased from Paul Skawinsk at lakeplants@yahoo.com; Amazon.com; or the University of Wisconsin Lakes Program: www.uwsp.edu/cnr/uwexlakes/publications

Review by Scott Milburn.

In Minnesota, we are reliant upon focused texts like *Trees and Shrubs of Minnesota* and the recently published *Native Orchids of Minnesota* or the standard dichotomous keys. Often, exposure is essential to learning the flora, and sometimes it is nice to have some type of field guide that points the user in the right direction. Botanical field guides can be a great way for readers to introduce themselves to a specific group of plants or even to a new region where the most common plants are unfamiliar to the user.

Aquatic species in particular can be difficult to learn, due to the habitat itself and inability to see the plants in hand. It is not often that I find myself with a net or a rake that allows the collection of aquatic material, plus my tendency is to focus on terrestrial plants and dry feet. There are such technical keys as the *Aquatic and Wetland Plants of Northeastern North America*, but this is not likely something to pack away in a backpack.

Paul Skawinski, a Wisconsin botanist, has released a second publication on aquatic plants titled *Aquatic Plants of the Upper Midwest*. This is a 174-page field guide that covers Minnesota, Wisconsin, and Michigan. The guide is organized by morphological groupings, which makes it easy to narrow one's focus. As with the author's previous publication, *Aquatic Plants of Wisconsin*, the guide includes a brief description of each species and color photographs. The layout and all of the photographs were done by Paul. The photographs are

very useful in showing the various diagnostic features and usually include a nickel to indicate scale.

The initiative required to produce this self-published guide is astounding, and I am very impressed with Paul's knowledge on the subject. As with most other botanical texts and field guides, modifications and updates are inevitable. Perhaps the future edition can include distribution maps for all three states and additional keys.

Is that plant native?

by Arthur Haines, research botanist. This is the introductory section of his article in the Spring 2012 issue of *New England WILD*, the magazine of the New England Wild Flower Society, and is published here with their permission.

The flora of New England can be defined as a list of plant species that grow in the region outside of cultivation. This list of wild plants is dynamic. Changes to the list of species found in the region are the result of many factors, including climate, intentional and unintentional introductions, species interaction, and site alterations, among many others. Since the settlement of this continent by Europeans, a large number of plants have been added to the regional flora. It is estimated that one-sixth of the North American flora is non-native. Interestingly, the additions have hailed from several continents

(not just Europe), a result of global trade and travel.

It is sometimes necessary to determine those species that are native to a region and those that are non-native. This is vitally important when deciding which species will have conservation efforts applied to them. It is also important when sites are to be planted. Using native species helps insure plants will not be invasive at a site, although this is not a guarantee.

Native is frequently defined as those species that were present prior to European settlement. This definition has many difficulties, including the fact no comprehensive surveys were performed before this time. Further, it can be difficult to use on a state level because it offers no guidelines for how to deal with movements of species that have long grown in North America (it is much better applied to continents as a whole).

President's column

Continued from page 1

other potential issues that conflict with our mission.

It is my goal as president to educate and bring about awareness of critical issues. We do not need to have balanced discussions — only fair and accurate. It is also essential to continue with the science and natural history focus that the membership enjoys.

Archive programs

We have had great programming over the years, and it will continue. We are also looking at how to archive all of these great programs. That has become an issue for our members that are outside of the Twin Cities. We have the financial resources to develop this, and the board will have to determine how best to do this.

Taxonomy notes

Why tree names are 'girls'

by Shirley Mah Kooyman, botanist
and MNNPS vice president.

In botanical Latin, plant names consist of a genus and a species epithet. The specific epithet, an adjective describing the genus, has to match in gender with the genus, a noun. The concept of matching genders exists in languages such as Spanish, Italian, French, Dutch and others. However, in English it doesn't exist, so it is a foreign concept to grasp.

Once that is understood, botanical Latin becomes a very useful tool for plant names. As in Latin, the general rule is: male = "us," neuter = "um," female = "a" (examples: *Elymus virginicus*, *Allium stellatum*, *Hepatica acutiloba*).

But you'll notice that generic names of trees don't seem to follow those rules. The genera (plural of genus) don't match in gender with their specific epithets (examples: *Fraxinus americana*, *Morus rubra*). So the question is: Why is that?

In Latin the rules are: Names of most rivers and mountains (unless they end in "a" or "e") are masculine. Most countries, islands, cities and trees are feminine. Here's a little rhyme to aid with remembering that:

A woman, island, country, tree
and city feminine we see:
Penelope, Cyprus, Germania,
laurus, Athenae.

It turns out that Carl Linnaeus (creator of the binomial system) kept some of the classical tree genera instead of creating new ones, even though they ended in "us." Remember that trees in Latin are feminine, regardless if the genus has a masculine ending. This is the reason why tree names are "girls."

Plant Lore

by Thor Kommedahl

What is swamp lousewort?

Lousewort is *Pedicularis lanceolata* in the snapdragon family. Because lousewort is hemiparasitic on species in the aster family, native grasses, and more, some have classified lousewort in the broomrape family (root parasitic herbs).

How did it get its names?

Lousewort refers to lice, and the genus name for lice is *Pediculus*. *Pedicularia* means "of lice." It was once believed that cattle grazing on this plant became covered with lice. Wort implies that this plant was once used in medicine. *Lanceolatus* means leaves are narrow and tapered at both ends.

What does the plant look like?

Petals are yellow with short upper lips, and flowers bloom August to October. The narrow leaves are smooth and often opposite. Stems are somewhat four-angled and hollow. The fruit is a capsule.

Where does it grow?

This native perennial grows in wet, calcareous meadows, swamps, and shores. Its distribution in Minnesota is in east-central counties.

Is it edible or medicinal?

The Iroquois Indians ate leaves cooked like spinach. There is no known medicinal use of swamp lousewort; however, plants contain digitalis-like alkaloids and are potentially dangerous for animals. Lousewort in forests (*P. canadensis*) was used by Potawatomi Indians as a physic.

Does it have any economic or ecologic uses?

It can be planted in bog gardens. Because of its selective parasitism, it can reduce populations of sedges (*Carex*) and some grasses to foster diversity within habitats.



Swamp lousewort (*Pedicularis lanceolata*), photo by Peter Dziuk.

Field trips are being planned

Ken Arndt, field trip chairman, is planning a fall field trip. Details were not complete at press time. For current information, check "Field Trips" on the website: www.mnnps.org

Ken is considering several suggested field trips for next spring and summer. The most ambitious idea is to take a small group to the Patterned Peatlands in northern Minnesota. The mile-long boardwalk in the Big Bog State Recreation Area might be incorporated into this trip. Lodging could be in Waskish.

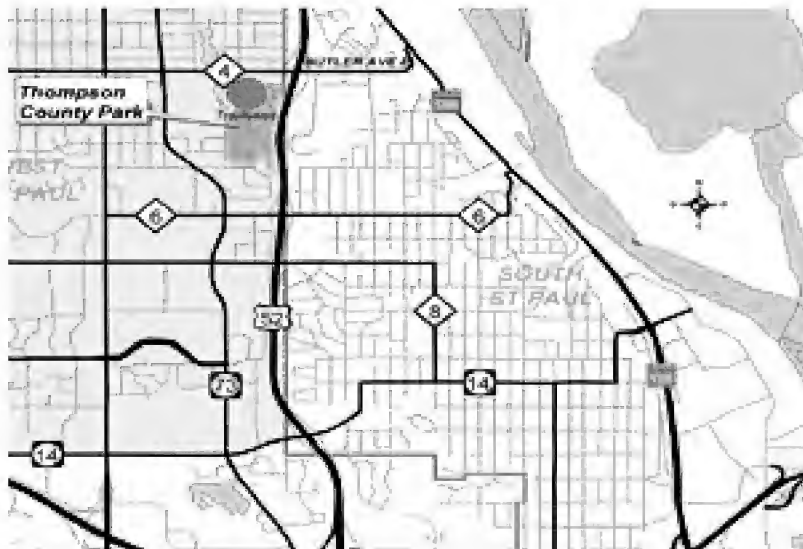
Timing would be when the maximum number of orchids are blooming. The bog has long been a source of medicinal plants for the Ojibwe Indians. Rare plants include yellow-eyed grass, bog rush and two kinds of sundews,

Would you be interested in this field trip? Do you have suggestions for other trips? Let Ken know. Contact him at ken.arndt@mnnps.org

Minnesota Native Plant Society
P.O. Box 20401
Bloomington, MN 55420

Fall 2012

Dakota Lodge, Thompson County Park
1200 Stassen Lane, West St. Paul, MN 55113



Directions:

Take Highway 52 to the Butler Ave. E. exit in West St. Paul.
Go west on Butler 0.2 mile to Stassen Lane.
Go south on Stassen Lane to Thompson County Park.